June 14, 1949. T. J. EDWARDS 2,473,017

BUILDING STRUCTURE

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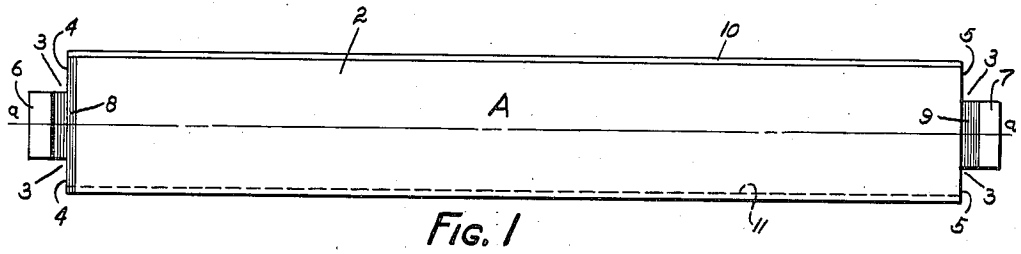


FIG. 1

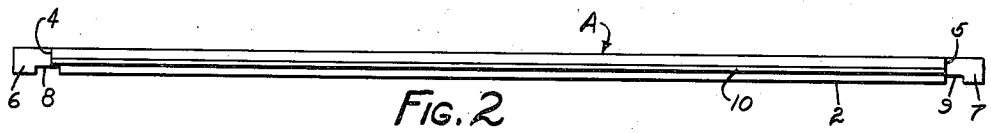


FIG. 2

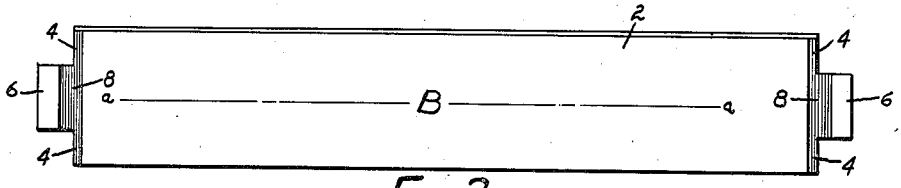


FIG. 3



FIG. 4

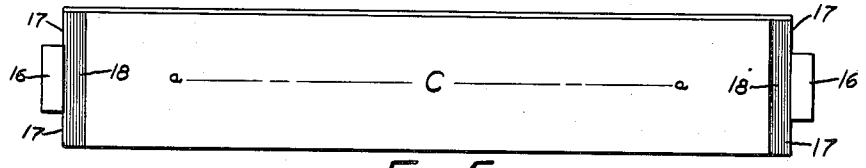


FIG. 5



FIG. 6

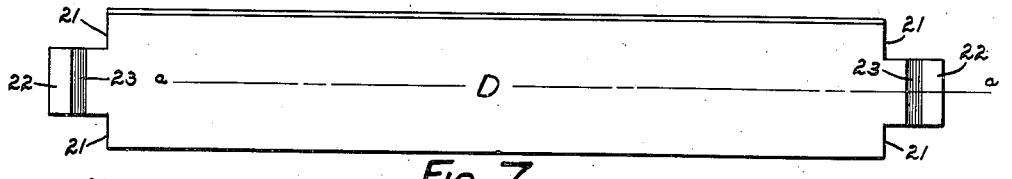


FIG. 7

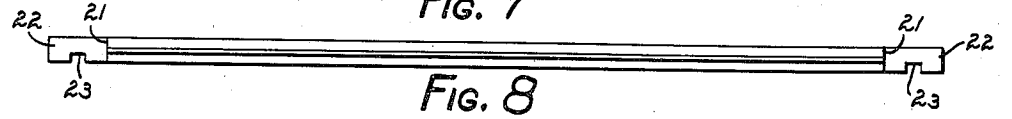


FIG. 8

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BUILDING STRUCTURE

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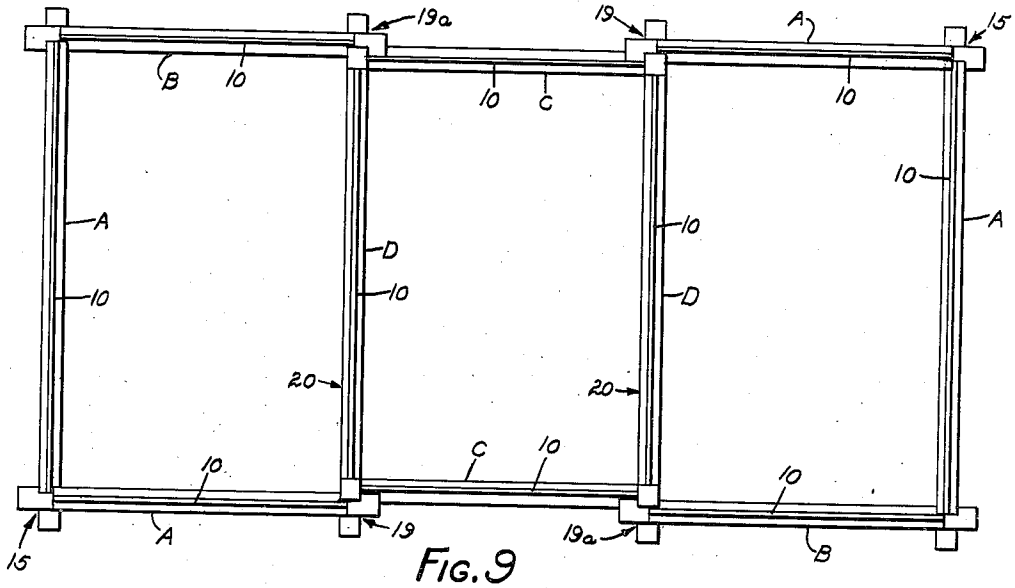


FIG. 9

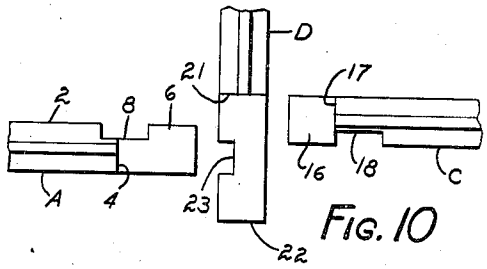


FIG. 10

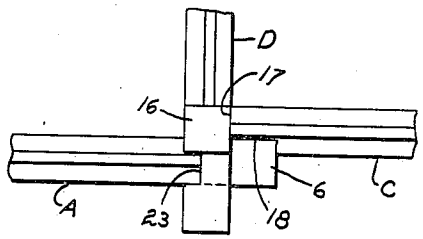


FIG. 11

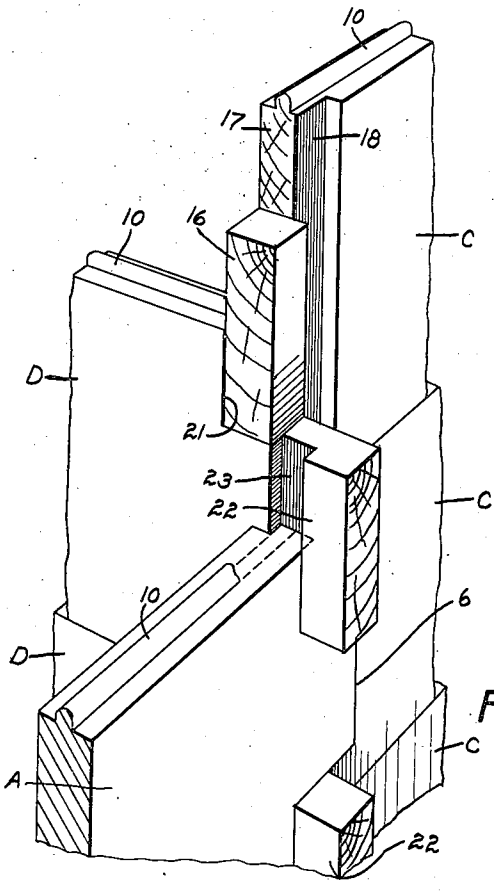


FIG. 12

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Patented June 14, 1949

2,473,017

UNITED STATES PATENT OFFICE

2,473,017

BUILDING STRUCTURE

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Application November 1, 1943, Serial No. 508,529

1 Claim. (Cl. 20—4)

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This invention relates to new and useful improvements in building structures and more particularly to such structures wherein the walls are composed of a plurality of fabricated boards or panels having means whereby they may be assembled in the erection of the walls without the use of nails, screws or other separable securing elements.

An object of the invention is to provide a building structure in which all of the parts may be prefabricated, the wall boards or panels having their ends so constructed that the boards of one wall may have their ends interlocked with the boards of adjacent walls in such a manner that the wall boards cannot become disengaged from one another at the corners of the building, and whereby the wall boards are free to expand and contract without interference from the interlocked joints at the corners of the building.

A further object is to provide a building of the class described in which substantially all of the parts including the supporting sills, flooring, upright walls, rafters and roof boards may be prefabricated, and the boards or panels constituting the upright walls of the building having their ends suitably notched at their ends to provide interlocking elements whereby the ends of the boards of adjacent walls may be secured together without the use of metal or other connectors, and whereby the building may be quickly erected without the use of skilled labor.

A further object is to provide a plurality of wall boards or panels having their ends so notched as to provide interlocking joints at the corners of the building which are substantially weather-proof, and also whereby cross walls or partitions may be provided in the building to divide it into two or more rooms or compartments, the boards or panels forming the cross walls or partitions being secured to the outside walls by interlocking engagement with the wall boards thereof and without the use of nails, screws or other separable connectors.

A further object is to provide a building board or panel having its opposed edges at each end transveresly notched to provide a tenon or tongue, and a transverse groove being provided in one face of the board at each end thereof, which grooves are adapted to receive end portions of adjacent boards, whereby the boards of adjacent walls may be secured together at the corners of the building by interlocking engagement, and without the use of nails, bolts or other separable connectors, in such a manner that a very rugged and substantial structure is provided whose walls

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are capable of withstanding considerable outward pressure, as may result when the building is utilized for storing bulk grain or other bulk materials.

A further and more specific object is to provide an elongated building board or timber having a tongue on one edge and a groove in its opposite edge adapted to interfit with similar tongues and grooves in adjacent boards, and each board being formed at each end with opposed shoulders and a longitudinally extending tenon disposed centrally of the board, one of said tenons having a transverse groove in one side face thereof having a side wall located in the plane of the shoulders at that end of the board, and the tenon at the opposite end of the board having a relatively wider groove therein extending inwardly beyond the shoulders at that end of the board whereby a portion of said last mentioned groove extends the full width of the board.

A still more specific object of the invention is to provide a plurality of building timbers or panels each provided at each end with a longitudinally extending terminal tenon and a pair of opposed shoulders, and one face of each timber having spaced transverse grooves therein, one located adjacent to each tenon of each timber, and the grooves in certain of said timbers being of less width than others and adapted to receive correspondingly sized shoulders provided on others of said timbers, whereby when a series of said timbers are assembled in the erection of adjacent walls, the timbers are securely interlocked in fixed position at the corners of the building and labyrinth seals are provided in the joints between adjacent walls whereby said joints are rendered substantially weather-proof.

Other objects of the invention reside in the unique manner of notching and grooving the ends of each board to provide interlocking tenons and grooves, and whereby such notching and grooving may readily be performed on standard automatic machinery; in the provision of a plurality of prefabricated building boards or timbers having their ends so notched and grooved that they may readily and quickly be assembled in the construction of a building by unskilled labor, and without the use of nails, bolts, or other separable fastening elements, and also whereby multiple room buildings of various types and shapes may be quickly erected substantially without the use of a hammer and saw, and whereby such buildings may be erected in a comparatively short time; and in the unique shape and design of the tenons, grooves and shoulders pro-

vided at the ends of the timbers whereby all of the walls of said tenons, grooves and shoulders are disposed in either right angular or parallel relation to the longitudinal centerline of the timber, whereby the operation of forming said tenons, grooves and shoulders is an extremely simple one and may be accomplished in quantity production at very low cost.

Other objects of the invention will appear from the following description and the accompanying drawings and will be pointed out in the annexed claim.

In the accompanying drawings there has been disclosed a structure designed to carry out the various objects of the invention, but it is to be understood that the invention is not confined to the exact features shown, as various changes may be made within the scope of the claim which follows:

In the drawings:

Figure 1 is a face view showing one of my novel building timbers;

Figure 2 is a top view of Figure 1;

Figure 3 is a face view of a timber showing portions of the transverse grooves at the ends thereof extending the full width of the timber;

Figure 4 is a top view of Figure 3;

Figure 5 is a face view of a timber in which the transverse grooves are entirely within the body of the timber and extend the full width thereof;

Figure 6 is a top view of Figure 5;

Figure 7 is a view showing a timber having relatively longer tenons at their ends and in which the transverse grooves are formed in the tenons and are relatively smaller in width than those shown in Figures 3 and 5;

Figure 8 is a top view of Figure 7;

Figure 9 is a plan view of a building showing a construction comprising a plurality of rooms;

Figure 10 is a fragmentary plan view showing the same timbers as Figure 11, but in separated relation;

Figure 11 is a view similar to Figure 10, but showing the parts in assembled relation;

Figure 12 is an enlarged detail sectional view in perspective showing the construction of the wall structure illustrated in Figure 11.

To facilitate the erection of buildings of various sizes and shapes in accordance with the present invention, a plurality of slightly variantly shaped timbers or panels are utilized, all of which embody the same general characteristics or features. In Figures 1 and 2 I have shown a timber or panel which will hereinafter be referred to by the reference character A. This timber comprises a body 2 which is transversely notched at each end as indicated at 3, to provide a pair of shoulders 4 at one end and a pair of shoulders 5 at the opposite end. The shoulders of each pair are disposed in a common plane, or in other words, are vertically aligned with one another and are disposed at right angles to the axis *a—a* of the timber, as clearly illustrated in Figure 1. Tenons 6 and 7 are provided at the ends of the timber and are preferably symmetrically disposed about its axis *a—a*, as clearly illustrated in Figure 1.

To secure together the timbers at the corners of the building without the use of nails, screws, bolts, or other separable securing elements, the tenon 6 is shown provided with a transverse or vertically disposed groove 8 which extends partially into the body of the timber. The width of the groove 8 is substantially equal to the thickness of the timber. A relatively smaller groove 9 is provided in the tenon 7, one wall of which is

aligned with the shoulders 5. The width of the groove 9 is substantially equal to the width or thickness of the shoulders 4 provided at the opposite end of the timber. To provide leakproof joints between adjacent timbers the upper edge of each timber is preferably provided at its upper edge with a tongue 10, and its lower edge preferably has a groove 11 of conventional design adapted to receive the tongue 10 of a contiguous timber.

In Figure 9 there is shown a multiple room structure to which the invention is particularly applicable. The four corners located intermediately of the ends of the building are each formed by joining together the ends of three walls. When three walls are thus jointed together the recessing at the ends of the timbers must be so designed and constructed that when the timbers are interlocked with one another, the joints therebetween will be leakproof and weatherproof.

Figures 1 to 8, inclusive, illustrate the various timbers utilized in the construction of a building such as illustrated in Figure 9. As here shown the diagonally opposed corners 15 of the building are constructed by joining together the ends of timbers A. Timbers B, C, and D, shown in Figures 3, 5, and 7, are used in the construction of other walls of the building, including the cross-walls or partitions 20 which divide the building into a plurality of rooms.

Each timber B comprises a body 2 which is transversely notched at its ends to provide at each end a pair of shoulders 4 separated by terminal tenons 6 corresponding to the tenons 6 shown in Figures 1 and 2. Vertically disposed grooves 8 are provided in each tenon 6 and extend partially into the body of the timber in a manner similar to that shown at the left hand end of Figure 1. In other words, both ends of the timber B are identical in construction, and are identical to the left hand end of timber A.

Timber C differs from timbers A and B in that relatively shorter tenons 16 are provided at the ends thereof. Aligned shoulders 17 are also provided at each end of the timber C and a vertical groove 18 is cut in the face of the board at each end thereof. One side wall of each groove 18 is coincident with its respective shoulders 17, and the width of each of said grooves is substantially equal to the thickness of the timber, whereby each groove 18 may receive the face of one of the tenons 6, as clearly illustrated in Figure 11. Figure 11 illustrates one of the corners 19 of the building, and Figure 12 illustrates the relationship between the adjacent ends of timbers A, D and C before being interlocked together as shown in Figure 11. Corners 19*a* are in opposed relation to corners 19, but are identical in construction except that timbers B are utilized in lieu of timbers A.

As shown in Figure 7, the timbers D which constitute the cross-walls or partitions of the building shown in Figure 9, are notched at their ends to provide a pair of vertically aligned shoulders 21 at each end of the timber. In the timbers D relatively longer tenons 22 are provided, each of which is provided with a vertically disposed groove 23. The widths of the grooves 23 are substantially equal to the thickness of the shoulders 4 provided on timbers A and B.

In each of timbers B, C and D, the tenons at the ends of said timbers are disposed in the longitudinal axes *a—a* of their respective timbers, as illustrated in the drawings.

Figures 1 to 8, inclusive, illustrate the form of timbers required to construct the corners shown at 19 and 19a in Figure 9. It will be noted that the general characteristics and constructional features of the ends of all of the timbers are similar in that each end of each timber is formed with a symmetrically disposed longitudinally extending tenon, a pair of vertically disposed shoulders, and a transverse or vertically disposed groove. The sizes and shapes of the tenons, shoulders, and grooves may vary somewhat from one another, but the same general constructional features are carried through in the fabrication of all of the timbers.

The notching and grooving of the ends of the timbers is such that the timbers may be fabricated in quantity production on conventional automatic machinery, whereby all of the timbers to be utilized in a given building may be prefabricated and tied into small bundles for convenient handling in transit. To facilitate erection of the building, various timbers may be clearly marked in the construction or building thereof to indicate their relationship to one another in the building walls.

The particular manner of recessing one side face of each timber is of utmost importance in that it results in the provision of a labyrinth seal at each corner of the building, whereby all corners are rendered substantially weatherproof, whereby said timbers may be used in the construction of housing units and for various other structures such as buildings for storing bulk grain, and various other commodities which require thorough and complete protection from the elements.

It will be apparent to those skilled in the art that I have accomplished at least the principal objects of my invention, and it will also be apparent to those skilled in the art that the embodiments herein described may be variously changed and modified without departing from the spirit of the invention, and that the invention is capable of uses and has advantages not herein specifically described; hence it will be appreciated that the herein disclosed embodiments are illustrative only, and that my invention is not limited thereto.

I claim as my invention:

In a multiple room building including an outer wall and a partition wall extending inwardly from said outer wall at right angles thereto, each of said walls being composed of a series of timbers arranged in superimposed edgewise relation, and each series of timbers in the outer wall comprising at least first and second timbers disposed in substantially longitudinal alignment, each of said first timbers having its opposed edges notched at each end thereof to provide a pair of opposed shoulders and a terminal tenon at each end of each timber, and each second timber having its opposed edges notched at each end thereof to provide a pair of opposed shoulders and a terminal tenon at each end of the timber, the tenons of said second timbers being relatively shorter than the tenons of the first timbers, and said first and second timbers each having one side face only thereof transversely grooved at each terminal tenon thereof whereby the shoulders of the first timbers are relatively narrower than the shoulders of the second timbers, thereby to provide interlocking elements for locking adjacent ends of said first and second timbers together against relative longitudinal movement, and each timber of said partition wall having its opposite edges notched at each end thereof to provide a pair of opposed shoulders and a terminal tenon at each end of each of said timbers, which tenons are relatively longer than the tenons of said first and second timbers and are receivable in aligned openings provided by the notched ends of said first and second timbers, and each of said partition wall timbers having its tenons transversely grooved on one side face only to receive the relatively narrower shoulders of said first wall timbers, the shoulders, tenons, and transverse grooves of said timbers cooperating to interlockingly secure together the timbers at the corners of the structure and providing weather-proof joints therebetween.

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